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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,506	12/11/2001	Kalu K. Vasoya	47490/RAG/S968	8703

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EXAMINER

XU, LING X

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/020,506

Applicant(s)

VASOYA ET AL.

Examiner

Ling X. Xu

Art Unit

1775

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 56-69 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 56-68 is/are rejected.
- 7) ☒ Claim(s) 69 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other:

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicants' amendments filed on 1/31/2003 have been entered. Claims 1-55 have been cancelled. Claims 56-67 have been added. In light of applicants' amendments, previous oral restriction requirement based on the original claims 1-55 is now withdrawn.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 60-65 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 60-64, it is unclear if the resin is an electrically conductive resin by itself or becomes an electrically conductive resin after addition of the additives listed in claims 62-64.

In claim 65, it is unclear how the electrical connection between the carbon containing layer and the electrically conductive layer is established by contact between the carbon in the carbon containing layer and the electrically conductive layer. Since the carbon layer also contains electrically conductive resin and the carbon is impregnated with the resin.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 56-61 and 64-68 are rejected under 35 U.S.C. 102(e) as being anticipated by Zweben et al. (US 4,888,247).

Zweben discloses a heat conducting laminate which is laminated to a printed wiring board (Col. 16, lines 10-25). The heat conducting laminate comprise at least one layer of metal ("the electrically conductive layer") and at least one layer of polymer matrix composite material having low-thermal-expansion reinforcing material distributed throughout and embedded therein ("the carbon containing layer") (Abstract).

Zweben also discloses the polymer matrix material can be formed into the laminates by using prepregnated sheets or films of the polymer matrix material with the reinforcing material integrally incorporated or embedded therein or by using uncured layers of polymer matrix composite material with the reinforcing material. The prepregnated sheets or films are referred to as "prepregs". Examples of the prepregs include carbon fibers in an epoxy resin matrix system (Col. 9, lines 1-40).

Zweben also discloses the laminate comprises plurality of metal layers adjacent to each other in the laminates and a plurality of layers of polymer matrix composite material adjacent each other in the laminate (the layer contact with the metal layer functions the same as the claimed "prepregs layer")(Col. 8, lines 40-45).

Zweben further discloses that the reinforcing material is in the form of particles including powder, and fabrics including fibers and woven fabrics (Col. 5, lines 30-40). Examples of the reinforcing materials include carbon, graphite, alumina, boron nitride (Col. 10, lines 15-45). The reinforcing materials are also in the form of unidirectional orientation (Col. 17, lines 45-67).

Since Zweben discloses the same laminate structure comprises the same components as claimed in claims 57-59 and claims 64-68, the same laminate would also have the same properties as claimed in claims 60-61.

Zweben discloses all the limitations of claims 57-61 and 64-68.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 62 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zweben et al.

As stated above, Zweben discloses a heat conducting laminate which is laminated to a printed wiring board (Col. 16, lines 10-25). The heat conducting laminate comprise at least one layer of metal ("the electrically conductive layer") and at least one layer of polymer matrix composite material having low-thermal-expansion reinforcing material distributed throughout and embedded therein ("the carbon containing layer") (Abstract).

Zweben also discloses the reinforcing materials can be graphite fibers and carbon fibers and various additives may also be incorporated in the laminates (Col. 20, lines 20-30).

Zweben does not specify the polymer matrix composite comprise additive of pyrolytic carbon.

However, Zweben teaches the addition of carbon and graphite in the form of particles. Carbon, Graphite, and pyrolytic carbon are similar product and have similar properties in the polymer matrix composite.

Therefore, it would have been obvious to one of ordinary skill in the art to use different carbon additives such as graphite, pyrolytic carbon in the polymer matrix composite layer because they are similar product and have similar properties in the polymer matrix composite.

5. Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zweben et al. in view of Durand et al. (US 5,326,636).

As stated above, Zweben discloses a heat conducting laminate which is laminated to a printed wiring board (Col. 16, lines 10-25). The heat conducting laminate comprise at least one layer of metal ("the electrically conductive layer") and at least one layer of polymer matrix composite material having low-thermal-expansion reinforcing material distributed throughout and embedded therein ("the carbon containing layer") (Abstract).

Zweben also discloses the reinforcing materials can be graphite fibers and carbon fibers and various additives may also be incorporated in the laminates (Col. 20, lines 20-30).

Zweben does not specify the polymer matrix composite comprise silver oxide additive.

Durand teaches the addition of conductive particle filler in the epoxy resins composite can improve long-term performance of the resins composite in high temperature and high humidity environments (Col. 6, lines 23-35). The preferred conductive particle filler is silver because its oxides are conductive in contrast to the insulating oxides of copper, nickel, tin (Col. 5, lines 50-60).

Therefore, it would have been obvious to one of ordinary skill in the art to add silver oxide in the epoxy resins of the polymer matrix composite layer in order to increase the conductivity of the epoxy resins composite and improve its long-term performance.

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***Allowable Subject Matter***

6. Claim 69 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling X. Xu whose telephone number is 703-305-0395. The examiner can normally be reached on 8:00 - 4:30 Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah D. Jones can be reached on 703-308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Ling X. Xu  
Examiner  
Art Unit 1775

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LX

April 2, 2003

  
DEBORAH JONES  
SUPERVISORY PATENT EXAMINER